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THE PRESENT TREND IN THE TEACHING OF MATHEMATICS

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No recent educational movement is more remarkable, in certain ways, than the present deep and widespread interest in improving the teaching of mathematics, which is manifest in the large and constantly increasing number of associations throughout the country organized for this distinct purpose.

The movement is remarkable for the spontaneity of its inception and for the rapidity of its growth. Fully a score of organizations of mathematics teachers date their origin since 1900, among the largest of which are: The Association of Mathematics Teachers of New England, the Association of Mathematics Teachers of the Middle States and Maryland, and the Central Association of Science and Mathematics Teachers of the Middle West. An extended list of such associations, together with their officers, may be found in the October number of *School Science and Mathematics*.

Another remarkable feature of this movement is the fact that it is taking place in the face of what has, perhaps, been the most hopeless condition of inertia in modern educational history—an inertia founded upon the complacent and widespread belief that mathematics is the one branch of the curriculum which stands forth in a substantially perfect, crystallized form, the teaching of which is an accomplished art, based upon administering to the pupil, through a long and continuous régime, properly dissected portions of doctrine and exercises.

But several things have happened in recent years. For example, that heterogeneous assemblage of unrelated topics known as “college algebra,” which has long held sway as an orthodox course, is now no longer offered in many colleges and universities. It has been supplanted by a more rational course in which the elements of co-ordinate geometry are blended with the

elements of the theory of equations so as to form a logical and practical extension of secondary algebra to the solution of numerical higher equations, leaving the more technical topics for late consideration in more advanced work. Even in first-class technical schools some such modification is taking place, not only with respect to college algebra but affecting a readjustment and unification of all the freshman and sophomore courses in mathematics. In the calculus great changes have taken place in the way of postponing to a later period the more theoretical portions and reading early in the course the higher applications, especially in the realm of mechanics and physics. In trigonometry also the interesting and practical applications are now made to precede rather than follow the greater part of the theory. In all subjects, graphic methods are coming to occupy a prominent place with respect to both theoretical and practical considerations.

In the field of secondary mathematics, however, the feeling of dissatisfaction is especially widespread, judging from the ever-increasing number of papers, reports, and discussions among the various associations. These have largely been directed toward the teaching of algebra and the arraignment has been chiefly against the artificial character of the problems, the preponderance of manipulation of abstract symbols as over against concrete applications, and the increasing tendency of the textbooks to force the recondite reasoning and theoretical side of the subject farther and farther down in the course, so that the beginner becomes appalled, discouraged, and not infrequently overwhelmed.

So far, the trend of the discussions has been largely iconoclastic, but hopeful signs are now appearing that a period of *constructive* criticism has begun.

Two representative committees of the Mathematics Section of the Central Association of Science and Mathematics Teachers have been at work, one on geometry and one on algebra, each for a period of one year. The geometry report in preliminary form was printed last summer and has been widely distributed, and the algebra report in preliminary form is printed in the October number of *School Science and Mathematics*.

These reports are to form the basis of discussion at the two sessions of the Mathematics Section of the Central Association in St. Louis on November 29 and 30. No other topics are to be considered. Every effort will be made to do constructive work in the way of practical suggestions for improving the pedagogy of these subjects in the schools. Besides the chairman of the respective committees, G. W. Greenwood of Dunbar, Pa., for the geometry, and Charles Ammerman of St. Louis, Mo., for the algebra, the leading speakers will be Professor Florian Cajori of Colorado College, Professor G. B. Halsted of the State Normal School, Greeley, Colo., Professor E. R. Hedrick of the University of Missouri, Professor G. C. Shutts of the State Normal School, Whitewater, Wis., W. W. Hart of the Shortridge High School, Indianapolis, Ind., and C. W. Newhall of Shattuck School, Faribault, Minn.